DOCUMENT RESUME

ED 154 247 08 CE 016 159

AUTHOR Olson, Lawrence S.
TITLE An Empirical Study of Decisions Involving Post-Secondary Vocational School Training. Volume I--Executive Summary. Final Report.
INSTITUTION Rochester Univ., N.Y.
SPONS AGENCY Bureau of Occupational and Adult Education (DHEW/OE), Washington, D.C.
BUREAU NO 498AH60205
PUB DATE Mar 78
CONTRACT G007603868
NOTE 20p.; Table information on page 10 may not reproduce well due to small print; For a related document see CE 016 160

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS Dropouts; *Educational Benefits; Inner City; Intelligence; *Males; *Motivation; National Surveys; *Post Secondary Education; *Private Schools; Program Length; Rural Youth; Socioeconomic Background; Urban Youth; *Vocational Education; Vocational Followup; Wages
IDENTIFIERS United States

ABSTRACT

A study examined decisions involving private, postsecondary vocational schooling using three large, national sets of data (from the National Longitudinal Surveys) on males. Particular attention is paid to three target groups--inner-city and rural individuals and dropouts. Various equations were estimated using a life-cycle model of time allocation to market work, college, and vocational schooling. Empirical results indicate that persons who took very short programs in private vocational schools (less than three full-time-equivalent months) earn more than persons who didn't train but that this advantage decreases and eventually reverses for longer programs. Estimated dropout penalties are insignificant for all but inner-city youths. Dropout rates from private vocational schools are high, and dropping out appears to be an important method of choosing program length. Other results indicate that persons with poor socioeconomic backgrounds and high IQs take private vocational schooling. Also, during the time they attend private vocational schools, students get higher paying jobs than similar non-trainees. Current governmental policies encourage much longer programs in private vocational schools than appear to be justified by this study. Inner city youths in particular should be encouraged to take and complete short programs, since their estimated dropout penalty is large. (A more complete technical report is also available--see note.) (JT)

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ED154247

Final Report

PROJECT No. 498AH60205
Grant No. G007603868

Lawrence S. Olson
University of Rochester
Rochester, New York 14627

AN EMPIRICAL STUDY OF DECISIONS INVOLVING POST-SECONDARY VOCATIONAL SCHOOL TRAINING

VOLUME I - EXECUTIVE SUMMARY

March 1978

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

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CE 016 159

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Grant or Contract No. G00760368

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Lawrence S. Olson

University of Rochester

Rochester, New York 14627

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The research reported herein was performed pursuant to a grant with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

U.S. DEPARTMENT OF

HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Occupational and Adult Education

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ABSTRACT

Grant G00760368

This study examines decisions involving private, post-secondary vocational schooling using three large, national sets of data on males. Particular attention is paid to three target groups--inner-city and rural individuals and dropouts. Various equations are estimated using a life-cycle model of time allocation to market work, college, and vocational schooling.

Empirical results indicate that persons who took very short programs in private vocational schools (less than three full-time-equivalent months) earn more than persons who didn't train but that this advantage decreases and eventually reverses for longer programs. Estimated dropout penalties are insignificant for all but inner-city youths. Dropout rates from private vocational schools are high, and dropping out appears to be an important method of choosing program length. Other results indicate that persons with poor socio-economic backgrounds and high IQ's take private vocational schooling. Also, during the time they attend private vocational schools, students get higher paying jobs than similar non-trainees.

Current governmental policies encourage much longer programs in private vocational schools than appear to be justified by this study. Inner-city youths in particular should be encouraged to take and complete short programs, since their estimated dropout penalty is large.

INTRODUCTION

Private, post-secondary vocational schools are important providers of post-secondary training, especially to disadvantaged youths. In a large, representative sample of young men used for this project about 10% had taken some training in these schools. This percentage was equal for inner-city, rural and other young men, although inner-city and rural youths were much less likely to have attended college than others. Dropout rates in these schools are quite high -- about 40%. Existing studies of students in these schools, of the subsequent effects of training and of available policy options are quite crude and partial. This project represents an attempt to fill some of the gaps in available knowledge.

Basically, the study uses statistical analysis of three large, nationally representative surveys of males to study students' decisions about private, post-secondary vocational schooling. Three "target groups" (dropouts, inner-city and rural individuals) are given special attention, and policy recommendations are made.

The most striking results of this project are that:

(1) For otherwise similar young men, those with less than three (full-time) months of private vocational schooling earn higher wage rates than those with none of this schooling, but the longer students attended the schools the smaller is the wage premium (in fact, persons with more than about one full-time year of vocational schooling actually earn less than otherwise similar individuals with no vocational schooling), and

(2) Except for inner-city youths (for whom dropping out has serious consequences), wage rates of persons who attended vocational schools for a given amount of time are essentially the same, whether they stopped going because their program ended or whether they dropped out. These results may help explain the high dropout

rates in private vocational schools, since they imply that a non-inner-city young man who for any reason finds himself enrolled in a one-year vocational program should drop out after two or three months.

In the following sections, I briefly explain what was done in the project, go into more detail about findings and indicate the kinds of policy prescriptions implied by the project's findings. Persons desiring a more complete description of findings and methods should consult Volume II of this report.

DESCRIPTION OF DATA SOURCES AND RESEARCH METHODS

The project analysed three large, national data sources:

(1) The National Longitudinal Survey (NLS) of Work Experience of Young Men, a sample of about 5000 males aged 14-24 in the first survey year (1966) and reinterviewed yearly (except 1972) until 1973.

(2) The NLS of Work Experience of Mature Men, a companion sample of about 5000 males aged 45-59 in 1966, and

(3) The National Longitudinal Survey of the High School Class of 1972 (HS72), a sample of more than 22,000 members of 12th grade classes in 1972. Only the male respondents were included in the data for this project.

The NLS data sets are available from the Center for Human Resource Research, Ohio State University, while the HS72 data set is available from the Research Triangle Institute, Research Triangle Park, North Carolina. The two NLS data sets are reasonably easy to use, but I cannot recommend use of the HS72 data for any purpose in its current form. It contains too many errors and inconsistencies. Of course, problems with this data set were not anticipated or it would not have been chosen for the project. Only the "first follow-up" data were used in this study.

All three data sources are national and all provide relatively complete

information on the characteristics of respondents and their post-secondary schooling.

For this project, I used a model which accounted for the fact that decisions about vocational schooling are closely tied to decisions about college and work. The younger men's NLS data source was used to study what types of people attend vocational schools and colleges and how this training affects their wages in periods with training. I also used this data source to analyze subsequent effects of vocational schooling and college. The older men's NLS data source was used to study long-term effects of vocational schooling and college. The HS72 data source contained information on costs of vocational school and 2- and 4-year college and on aid received by individuals, so I used this source to estimate effects of aid changes on training choices.

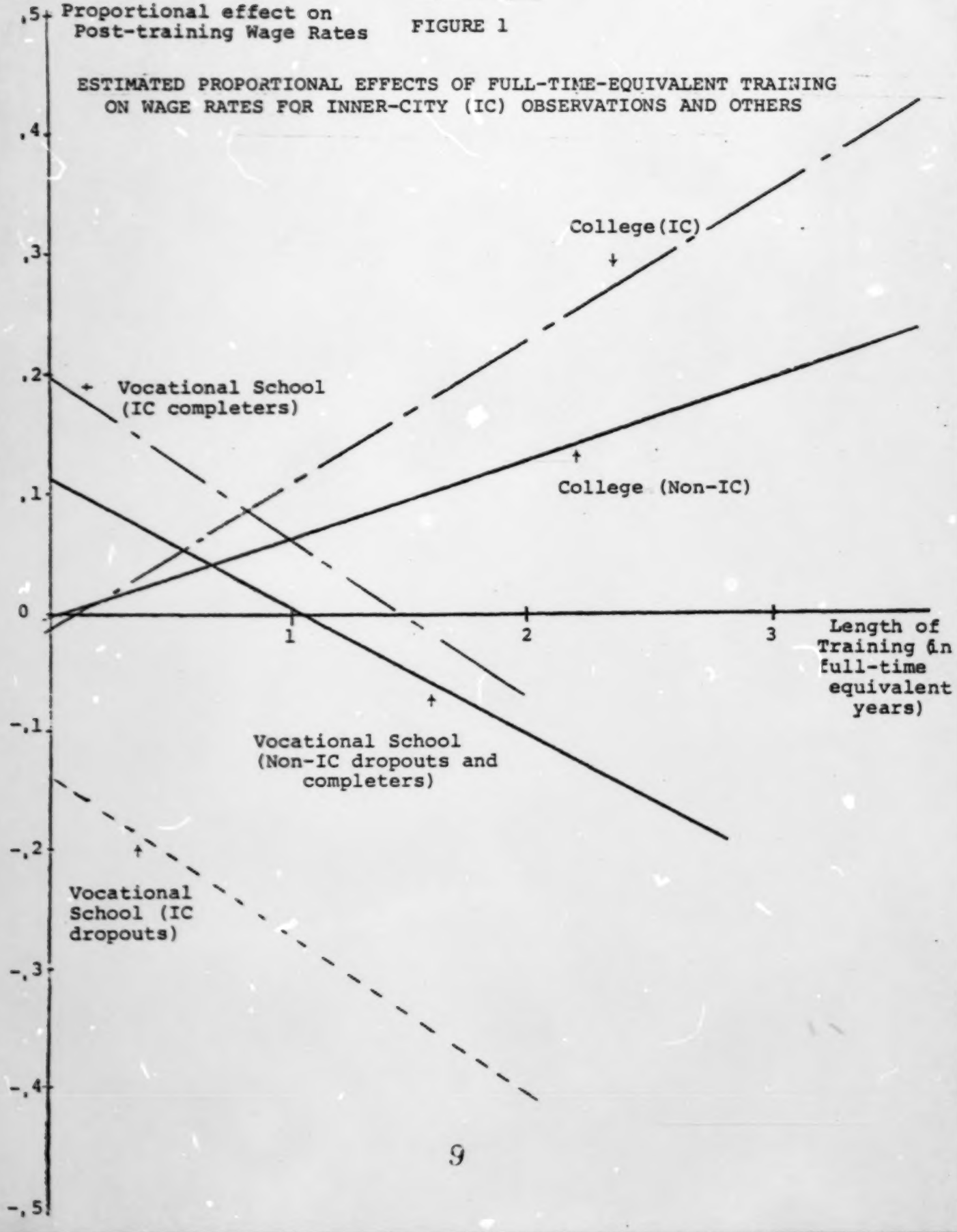
In the younger men's NLS, I designated a person as inner-city if, at age 14, he lived in the central part of a city of at least 50,000 and was below average in socio-economic status (SES: SES variables are provided in the younger men's NLS and the HS72 data sources). A person was designated as rural if he lived in a rural area at age 14. The HS72 respondents were classified in a similar way, except that the location used was as of the time of the first follow-up survey. For the older men's NLS, location at age 15 was used and the education of the household head when the respondent was 15 replaced SES.

MAJOR RESEARCH FINDINGS

The most important findings from my analysis of the younger men's NLS data are summarized by Figures 1 and 2. In both figures, the horizontal axis measures full-time equivalent years of training -- private vocational school or

FIGURE 1

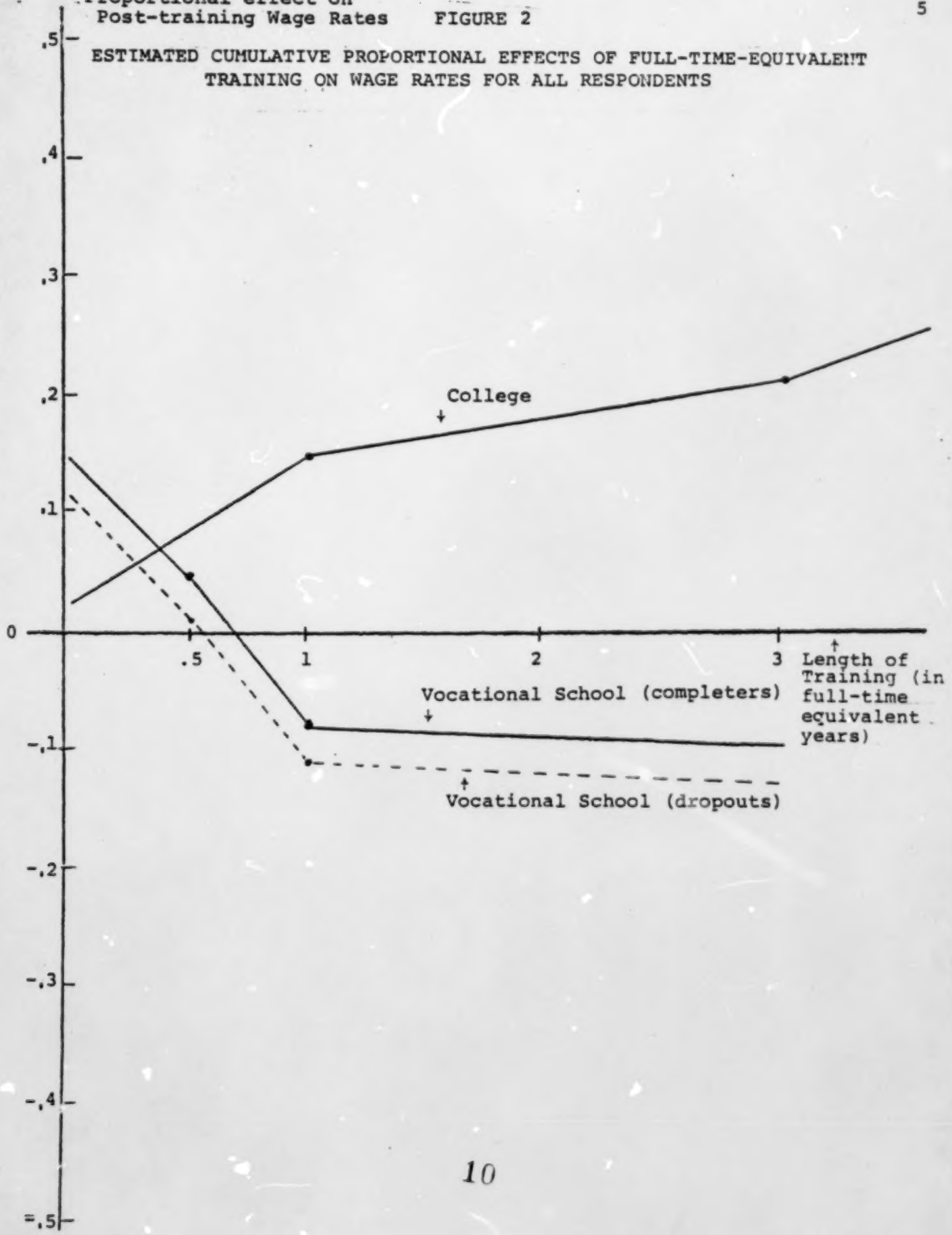
ESTIMATED PROPORTIONAL EFFECTS OF FULL-TIME-EQUIVALENT TRAINING ON WAGE RATES FOR INNER-CITY (IC) OBSERVATIONS AND OTHERS



Proportional effect on Post-training Wage Rates

FIGURE 2

ESTIMATED CUMULATIVE PROPORTIONAL EFFECTS OF FULL-TIME-EQUIVALENT TRAINING ON WAGE RATES FOR ALL RESPONDENTS



college[1] -- while the vertical axis measures the proportional effect of this training on subsequent wage rates. A person with none of either type of training would have no training effects, so the horizontal axis divides positive from negative.

Taking the "Vocational School IC completers" line in Figure 1 as an example, my results indicate that inner-city youths who completed very short programs (less than about three months) earn about 20% higher wages in later periods than similar youths with no training. However, the longer they train the less is this advantage, and those with more than 1½ years of training earn less than similar people who have not trained at all.

This result, that small amounts of vocational school training increase subsequent wages but that additional increments eventually lead to a negative total effect, was found to be true for the sample as a whole and for inner-city, rural, and other youths taken separately.

As can be seen from Figure 1, inner-city youths suffer a large loss when they drop out of private vocational school programs (inner-city dropouts from programs of all lengths earn much less than persons not taking any training). However, for non-inner-city youths (whether or not they are rural) dropping out has essentially no effect. This fact, together with the negative effect of increments to training, explains why dropping out of private vocational school apparently pays for all but inner-city youths.

Figure 2 presents results of a slightly more general model estimated on all

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[1] It should be noted that the term "vocational school" is used in this report to designate private, post-secondary vocational school. "College" refers to most post-secondary schooling in 2- and 4-year colleges. In particular, it includes training in 2-year colleges with vocationally oriented curricula. This lumping of a heterogenous group into "college" was necessary because the data sources generally did not provide the information necessary for further meaningful distinctions. The HS72 data did distinguish 2- from 4-year colleges, and I preserved that distinction when using the HS72 data.

respondents together. In this model, effects of increments to training are allowed to differ depending on the amount of previous training. This allows a test of whether, for instance, the negative effect of increments to private vocational schooling differs between the first half year and the second half year.

Results in Figure 2 show that the negative effect of increments to private vocational schooling seems to be concentrated in the first full-time equivalent year. My models were estimated in various forms and, although this break at one year occurred in all estimated models, in half of them I could not rule out the possibility that the break was a statistical artifact. Therefore, it is clear that persons with large accumulations of vocational schooling earn less than those with smaller accumulations. It is likely but not certain that the negative training effect is concentrated within the first year.

The small dropout penalty shown in Figure 2 is due entirely to dropout penalties on inner-city trainees. In this more general model, as in the model of Figure 1, rural and other trainees do not appear to lose when they drop out of private vocational schools.

It is important to emphasize what my results do and do not show with respect to effects of private vocational schooling. They do show that persons with more vocational schooling earn less than objectively similar persons with less training (for non-inner-city youths this is true whether the short length was planned or came from dropping out of a longer program.) My results do not necessarily show that if persons who took long programs had signed up for short programs or dropped out early they would have been better off.

The results are corrected for a number of observable characteristics (race, IQ, marital status, mother's education, age, etc.), but there could be some unobservable characteristic like motivation that makes people with small accumu-

lations of vocational training inherently higher earners that those with large accumulations. For instance, if the private vocational schools either acted only as placement services or if the material in their programs could be learned in much less than the allotted time, one can see how the more motivated students might leave before the less motivated students. This type of situation could make the effect of training increments look negative even if it was actually positive. Similarly, dropping out could look more benign than it actually was.

There is no reasonable way to get around this possible source of ambiguity, but my results are stark enough that more precision is really not needed. Since additional training involves both out-of-pocket and time costs, all that is required to show that some young men are training too long is that the effect of training increments not be sufficiently positive to overcome all costs. I think it highly unlikely that explanations about motivation differences are sufficient to reverse the estimated difference between the effect of very short, completed program (+15%) and one-year completed program (-8%). Such a reversal would require turning a 23% (15 + 8) fall in wages into the roughly 10% rise necessary to offset costs.

The conclusion from Figures 1 and 2, then, is not necessarily that increments to private vocational schooling decrease subsequent wages, but simply that some young men in each group (inner-city, rural, and other) seem to be taking too much of this training.

It is easy to see why young men might train too long. They may not fully understand their options, particularly since the idea that training increments don't raise wages is counter-intuitive. The schools may not fully comprehend the situation or may not find short programs profitable at "reasonable" tuition rates. Finally, both the state and federal governments have been pushing the vocational schools and their students toward longer programs. In particular,

most federal aid now requires a minimum of 600 classrooms hours (i.e., about a 6-month program).[2] These governmental policies are almost certainly counter-productive, especially for inner-city youths (dropout rates increase sharply with program length). I hope that greater understanding of the problem will cause these policies to be reversed in favor of policies emphasizing short programs in private vocational schools.

My results, it should be stressed, imply not just that long vocational programs are wasteful but also that short, completed programs can be very helpful. For inner-city youths very short, completed programs raise their wage rates an estimated 20% and dropping out is disasterous. For rural youths short programs raise wage rates an estimated 18% and dropping out does not seem to be harmful. It should be clear that improved governmental policy could yield potentially large dividends to these relatively disadvantaged youths.

Table 1 (repeated as Table 3 in Volume II) shows the distribution of observations on a merged data file made from the younger men's NLS (this data file was used for Figures 1 and 2). Since the period covered by the data, 1966-1973, has six internal years (respondents were not surveyed in 1972), an individual may generate as many as six observations. 2522 unique individuals are represented in the 8462 observations. Notice that about 10 percent of both inner-city youths and others have attended private vocational schools but that total accumulations are small. Inner-city youths who took vocational schooling accumulated only .34 full-time equivalent years on average versus .72 years for all observations. Dropout rates are similar --44% (36 of 82) for inner-city youths, 37% (280 of 760) for others. Therefore, it appears that the young men in this sample are generally making wise choices about vocational school training, although the high dropout rate for inner-city youths is disturbing. Rural youths are not directly represented in

[2] William Goddard, Executive Director of the National Association of Trade and Technical Schools, says that many private vocational schools have recently lengthened four-month programs to six months in response to federal aid policies.

TABLE 1

DATA ON VOCATIONAL SCHOOL YEARS (VOCYR), COLLEGE YEARS (COLYR) AND WAGE RATES FOR VARIOUS GROUPS

(Each Cell Contains Frequency and Proportion of N)

	N	VOCYR=0		VOCYR Greater Than 0		VOCYR Between 0 and 1/2		VOCYR Between 1/2 and 1		VOCYR Greater Than 1		Means over observations with VOCYR greater than 0	
												VOCYR	WAGE*
All Observations	8462†	7620	.900	842	.100	490	.058	137	.016	215	.025	.718	3.21
IC = 1	807	725	.898	82	.102	66	.082	12	.015	4	.005	.341	3.22
IC = 0	7655	6895	.901	760	.099	424	.055	125	.016	211	.028	.759	3.21
NONWHITE = 1	2331	2234	.958	97	.042	84	.036	3	.001	10	.004	.343	2.39
IC = 1 & NONWHITE = 0	405	350	.864	55	.136	42	.104	12	.030	1	.002	.337	3.61
IC = 1 & NONWHITE = 1	402	375	.933	27	.067	24	.060	0	0	3	.007	.349	2.41
IC = 0 & NONWHITE = 1	1929	1859	.964	70	.036	60	.031	3	.002	7	.004	.340	2.38
VOCDROP = 1	331	22	.066	309	.934	188	.570	69	.208	52	.157	.618	3.00
VOCDROP = 1 & IC = 0	295	15	.051	280	.949	165	.559	63	.214	52	.176	.655	3.03
VOCDROP = 1 & IC = 1	36	7	.194	29	.806	23	.639	6	.167	0	0	.268	2.75

	N	COLYR=0		COLYR Greater Than 0		COLYR=1		COLYR=2		COLYR=3		COLYR = 4 or More		Means over observations with COLYR greater than 0	
														COLYR	WAGE
All Observations	8462	6722	.794	1740	.206	502	.059	283	.033	130	.015	825	.097	2.97	3.76
IC = 1	807	765	.948	42	.052	14	.017	8	.010	2	.002	18	.022	2.64	3.63
IC = 0	7655	5957	.778	1698	.222	488	.064	275	.036	128	.017	807	.105	2.98	3.77
NONWHITE = 1	2331	2143	.919	188	.081	50	.021	40	.017	13	.006	85	.036	2.80	3.15
IC & NONWHITE = 0	405	381	.941	24	.059	8	.020	1	.002	0	0	15	.037	3.04	4.03
IC = 1 & NONWHITE = 1	402	384	.955	18	.045	6	.015	7	.017	2	.005	3	.007	2.11	3.08
IC = 0 & NONWHITE = 1	1929	1759	.912	170	.088	44	.023	33	.017	11	.006	82	.043	2.87	3.15

* The mean WAGE over observations with VOCYR = COLYR = 0 is 2.56.

† These represent 2522 different respondents.

this table; 10% of them attended private vocational schools with an average accumulation of .77 years and a dropout rate of 35%.

College patterns show the relative concentration of inner-city youths' secondary training in private vocational schools; only 5% of inner-city youths versus 22% of others attend college. Rural youths are also concentrated in vocational schooling, although somewhat less so; 12% of rural youths attend college.

This sample has no individual more than 31 years old and those in school are omitted, so proportions with college may be understated. However, the concentration of training by target groups in the vocational schools implies large potential gains if training decisions could be made more accurately.

A model of the decision to go to vocational school, of how long to remain, and of whether to drop out was estimated on the younger men's NLS and is reported as Table 4 of Volume II. Results imply that dropping out is an important method used by vocational students to decide on the length of their training programs. Signing up for long programs and then dropping out seems wasteful at best, and inner-city youths face an apparent no-win situation once signed up for a long vocational program (see Figure 1). Therefore, publicizing the advantages of short vocational school programs and differentially subsidizing short programs could be quite helpful.

My remaining results are not as dramatic as the idea that dropping out can pay, but they add to available knowledge about post-secondary training choices. Some of these results are:

(1) Students in private vocational schools are a relatively disadvantaged group with low IQ's and levels of their mothers' education. However, once these differences are adjusted for, inner-city and rural youths are neither more nor less likely to attend vocational school than others.

(2) Students earn somewhat higher wage rates in the years they attend private vocational schools than do non-students. This difference, estimated at more than $1 per hour for persons attending full-time and still working, can help the student finance his out-of-pocket costs.

(3) Self-reported average net (of aid) costs per full-time-equivalent year are lower for vocational schools than for 2- or 4-year colleges (presumably because average room and board costs are lower).

(4) Lengths of each type of training chosen are lower the higher are net costs, but the estimated degree of response to cost differences is larger for vocational schooling than for training in 2- or 4-year colleges. This result may imply optimism regarding the success of efforts to change students training choices with respect to the length of vocational programs, and

(5) Results from models estimated on the older men's NLS data show a very different structure, but returns to their vocational schooling are generally positive. Since their training was presumably taken 20 or 30 years before the survey was conducted, this result implies that effects of private vocational school training persist over the whole lifetime.

Taken together with the basic dropping out can pay result, these findings help flesh out the picture of vocational training decisions and their effects. Results of this project seem to imply that improved governmental policies toward post-secondary vocational schooling could do substantial good.

CONCLUSIONS AND RECOMMENDATIONS

This project is aimed at improving knowledge about training choices by inner-city, rural, and other youths and at indicating useful directions for policy. In this section, I review the project's conclusions and make policy

recommendations.

Substantial numbers of young males train in the private, post-secondary vocational schools and, since students in these schools are relatively disadvantaged, particular interest attaches to the accuracy of vocational training choices. Total training accumulations of vocational students are small -- averaging about three-quarters of a full-time-equivalent year -- and dropout rates are about 40%.

For all groups of trainess, I estimate that initial increments of private vocational schooling increase subsequent wage rates, but additional increments decrease this wage advantage. Further, except for inner-city youths, estimated dropout penalties are very small. From my results, it appears that many vocational students are first signing up for programs that are "too long" and than dropping out after they gain a better understanding of their options. Although this process seems to work tolerably well, except for inner-city youths, a more direct approach is almost surely preferable.

The project encountered data problems and there are inescapable sources of ambiguity about whether longer vocational programs cause low wages or merely serve young men whose inherent earning power is low (due to a deficiency of some unmeasurable characteristic). Given the starkness of my findings, however, there is no need to wait for better data before implementing new policies. All that is required is that additional increments to training not increase later wages by enough to overcome their costs.

This conclusion is surely true for inner-city youths, since dropout rates increase with program length and their estimated dropout penalty is 34%. For rural youths and others it is still almost surely true.

Therefore it seems reasonable to begin now to emphasize short, completed

programs in private vocational schools. Very short programs can be quite valuable (raising wage rates of inner-city youths an estimated 20%), and this value can be more fully exploited. New policies should pursue the joint objectives of 1) encouraging potential vocational trainees to enter programs of less than six (full-time-equivalent) months or even less than three months and 2) decreasing dropout rates (especially for inner-city youths).

Publicizing the benefits of short, completed programs in private vocational schools could help achieve these objectives. Another potential tool is a restructuring of governmental subsidies. For instance, there could be large subsidies (exceeding out-of-pocket costs) for completed programs of less than six full-time-equivalent months coupled with reduced subsidies for dropouts or persons taking programs of more than six months.

Policies of this general structure could yield large social dividends, particularly since private vocational schools serve a relatively disadvantaged group of young men. The most obvious beneficiaries would be inner-city youths, since many of them have suffered large penalties after dropping out of private vocational schools. Rural youths would also benefit, however, since more accurate choices would aid them in attempts to approach wage parity with their non-rural counterparts. Finally, the relatively disadvantaged group of vocational students who are neither inner-city nor rural would be helped.